
6. Memory

Program Name: Memory.java

Input File: memory.dat

Java only has “references,” but other programming languages like C have “pointers.” In this assignment you will implement these pointers. A variable has a value and an address associated with it. For example a variable ‘**var1**’ might have an address 10 and a value of 20. Another variable ‘**var2**’ might have an address of 20 and a value of 10. These variables can be used to hold values or point to another variable. The address, value, or pointed to value can be obtained through the prefix ‘&’, no prefix, and ‘*’ respectively.

Using the variables var1 and var2 above, examples are as follows:

&var1 will return var1’s address (10); &var2 will return 20.

*var1 will return the value located at the address which var1 points to. *var1 returns the value at address 20 (10).

*var2 returns 20.

var1 returns 20, and var2 returns 10.

Input

The first line will contain n, the number of test cases. n test cases will follow. Each test case will start with a line with two integers, m and k, separated by a space. m lines will follow in the format [var] [address] [value] where var is the variable name and the address and value are numbers. Next k lines will follow with formulas.

Output

For each formula, evaluate the answer and print out that value on a separate line, based on that test case’s variables.

Constraints

0 <= n <= 20
1 <= M <= 100
1 <= k <= 100

Example Input File

```
1
3 3
Var1 20 40
Var2 40 30
Var3 30 20
&Var2
*Var1
Var3
```

Example Output to Screen

```
40
30
20
```